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Division of Forestry

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# TRENDS IN CONNECTICUT'S FORESTS: A HALF-CENTURY OF CHANGE

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# CONNECTICUT'S FORESTS

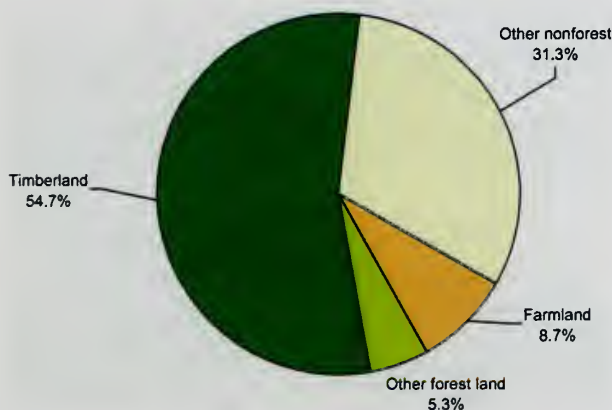


Forests provide wood and other products, watershed protection, wildlife habitat, biodiversity, a setting for recreation, and much more. Highlighted here are significant trends in Connecticut's forests over the last half-century. Data are summarized from forest inventories conducted by the USDA Forest Service, which periodically inventories the Nation's forest resources. In cooperation with the Connecticut Department of Environmental Protection Division of Forestry, the Forest Service completed the fourth statewide inventory of Connecticut's forests, in 1998.

## THE EXTENT OF CONNECTICUT'S REGROWN FOREST

**F**orests are the predominant type of natural vegetation in Connecticut, covering 1.9 million acres or 60 percent of the State. Connecticut was not always this heavily forested. Early settlers here cleared nearly three-fourths of the original forest for agriculture. Acreage farmed peaked around the middle of the 19th century, and then began a long decline that still continues. Forests have reclaimed much of the abandoned farmland through natural regeneration. The upward trend in forest area peaked during the 1950s. Since 1972, the amount of new forest land coming from abandoned farms has roughly equaled losses of forest land to development, with the total amount of forest land remaining stable. It is unlikely this trend will continue because there are no longer large amounts of marginal farmland to revert to forest, and development pressures are increasing on both farm and forest land.

AREA BY LAND USE, 1998



In view of its long history and advanced state of economic development, the amount of forest in Connecticut is remarkable. Litchfield County is the most heavily forested (75 percent) and Fairfield County the least (37 percent).

Forest land is categorized by the USDA Forest Service as either timberland or noncommercial forest land. Categorizing forest land is helpful in understanding resource availability and planning forest management. Timberland is capable of growing timber crops and is potentially available for harvesting. Ninety-seven percent of Connecticut's forest land (1.7 million acres) is classified as timberland. Noncommercial forest land includes reserved forest lands, unproductive forests, and urban forests. Harvesting for timber products on these lands is administratively restricted or economically impractical. Examples include parks,

wildlife preserves, and mountaintops and wet-lands with poor growing conditions. Noncommercial forest land has increased steadily from 17,000 acres in 1953 to 163,200 acres in 1998. Nearly all of this increase is due to the reclassification of timberland into the noncommercial category. Most noncommercial forest land is in public ownership.

## TRENDS IN FOREST-LAND AREA

(Thousands of acres at each inventory)

	Inventory date			
	1953	1972	1985	1998
Timberland	1,973.0	1,805.6	1,784.5	1,696.1
Noncommercial forest land	17.0	55.2	65.7	163.2
Total forest land	1,990.0	1,860.8	1,850.3	1,859.3
Percent forested	63.5%	59.7%	59.7%	60.0%
Estimated total land area*	3,135.0	3,116.8	3,101.0	3,101.0

\*Estimates of the total land area have changed because of new measurement techniques and refinements in the classification of small bodies of water.

## PEOPLE AND FORESTS

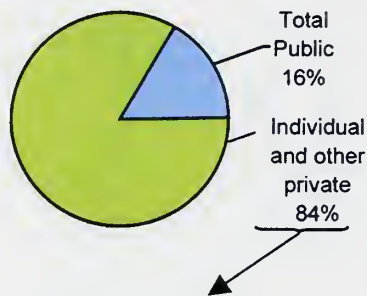
**T**he size of the population and how people live on the land are significant forces in shaping the forest. The population grew by 51 percent to 3.3 million people between 1953 and 1998, making Connecticut the fourth most densely populated state. Yet it ranks 13th in percentage of forest cover. Few places on earth have as many people living among so much forest.

Most of Connecticut's forest land is owned by an estimated 102,000 private individuals and enterprises, which hold 84 percent of the state's timberland. State, federal, and other public owners hold the remaining 16 percent. The numbers of acres owned strongly influence landowners' motives and management activities. Owners of large tracts of forest are more likely to manage their forests for timber products. Private and public water utilities, own some of the largest forested tracts. Although many in number, owners with small holdings account for a small portion of the timberland. Three-fourths of the private forest landowners have fewer than 10 acres and they collectively own about 9 percent of the timberland. These small tracts are primarily home sites.

The number of owners with fewer than 50 acres of timberland has increased by 68 percent since 1975. Wildlife biologists have found that breaking up large tracts of unbroken forest into many smaller forests by roads, home building, and other land development has been detrimental to many species of birds and other wildlife.



## TIMBERLAND OWNERSHIP IN CONNECTICUT



Private Timberland  
By Size Class of Owner, 1993

Acres owned (size class)	Number of owners	Total acres in class
1-9	77,200	126,700
10-49	18,400	404,600
50-99	3,200	202,300
100-499	3,000	379,300
500-999	200	126,700
1,000+	<50	176,800
All size classes	102,000	1,416,400

## MORE LARGE SIZE STANDS

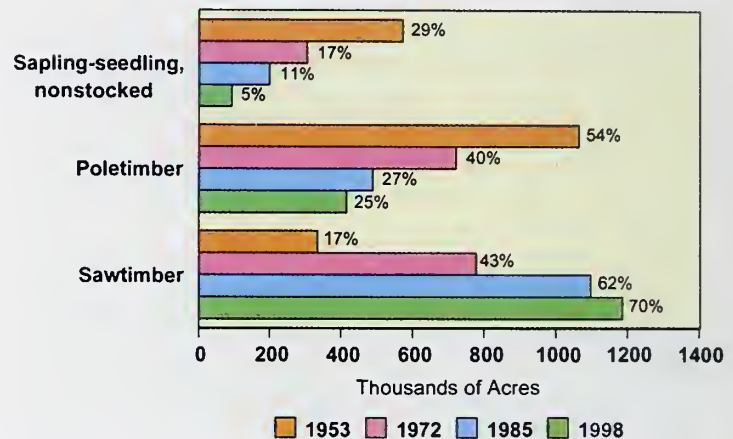
**T**imberland is classified by the size of trees growing on it for both timber resource and wildlife habitat purposes. Sawtimber stands, which have the majority of their stocking in large trees suitable for sawlogs, have increased in acreage. These stands have more of the attributes that are beneficial to wildlife: an understory with herbaceous plants and shrubs that provide wildlife food and cover habitat; bole cavities for nesting; bark flaps for feeding sites; and large dead trees, both standing and on the forest floor.

Poletimber-size stands declined in acreage. Trees in these stands are not yet mature enough to produce large amounts of nuts and seeds, and often form dense overstories that inhibit the growth of understory vegetation.

The area categorized as sapling/seedling and nonstocked stands has decreased from 29 percent of timberland in 1953 to 5 percent in 1998. Typically, early-successional pioneer tree species, along with many shrub and herbaceous plants that need full sun to grow, are found here. These stands provide unique nesting and feeding habitats for wildlife.

The shift to the more mature sawtimber-size class shows that forest habitats are changing. This is good news not only for the lumber industry but also for many wildlife species. However, the decline in wildlife species that need early-successional stands, such as Eastern bluebirds and chestnut-sided warblers, is of concern to many wildlife biologists. Forests containing all stand-size classes provide diverse habitats for wildlife, and an even flow of forest products, and might be more resistant to insect and disease outbreaks.

## TIMBERLAND AREA BY STAND-SIZE CLASS AND PERCENT OF TOTAL BY INVENTORY YEAR

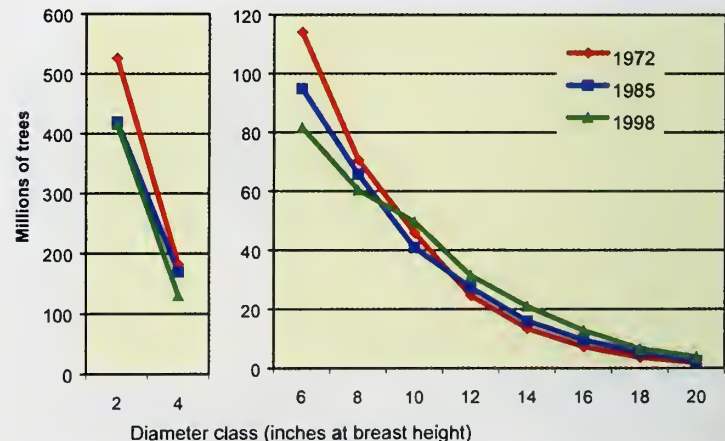


## TREES HAVE INCREASED IN SIZE AND NUMBER

**H**ow well forests are populated with trees is determined by measures of tree size and number. Foresters measure tree diameters at 4-1/2 feet above the ground and refer to this as diameter at breast height (d.b.h.). Since 1972, the average d.b.h. of trees 5 inches in diameter or greater has increased from 8.7 to 9.8 inches. During this period, the average number of trees per acre, 5 inches d.b.h. or greater, has increased from 157 to 161.

Changes in the numbers of trees were not distributed evenly across diameter classes. Since 1972, most of the increase in the number of trees occurred in diameter classes above 8 inches. Numbers of trees in the 2-, 4-, 6-, and 8-inch classes have decreased.

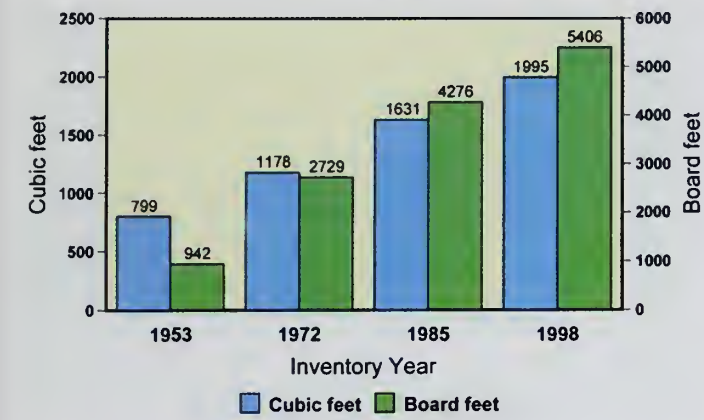
## NUMBER OF TREES BY DIAMETER CLASS



## THE VOLUME OF TREES HAS INCREASED

This increase in size and number of trees has resulted in an increase in the average volume of trees per acre of timberland. Volume per acre increased from 799 cubic feet in 1953 to 1,995 cubic feet in 1998.

AVERAGE VOLUME PER ACRE

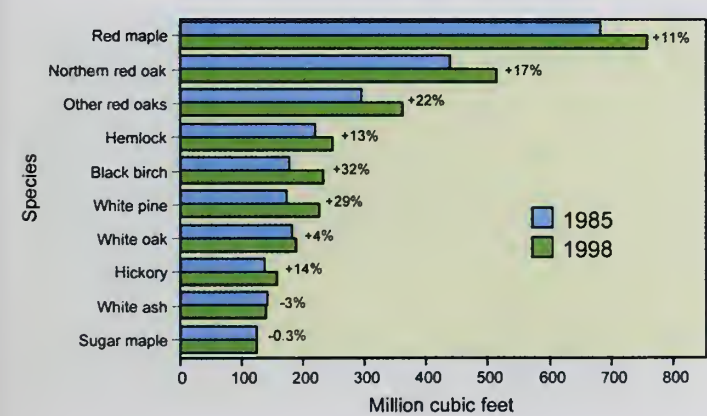


Despite a decrease in timberland area since 1985, the total cubic volume of trees increased by 16 percent. The portion of these trees that is large enough to produce sawlogs has increased by 20 percent to now total 9.2 billion board feet.

## RED MAPLE LEADS IN VOLUME

Connecticut's forests contain a diverse mix of species. The 1998 inventory identified 64 tree species, though many of these are uncommon. The 10 most common species (listed in the chart below) account for 88 percent of the cubic-foot volume. When ranked by volume, red maple is the leading species followed by northern red oak, which was the leading species in the 1953 and 1972 inventories. Ongoing high-grading of oak stands during harvesting on private land, high oak mortality following gypsy moth caterpillar outbreaks, and lack of oak regeneration are significant factors in this change.

CHANGE IN VOLUME OF TOP 10 SPECIES

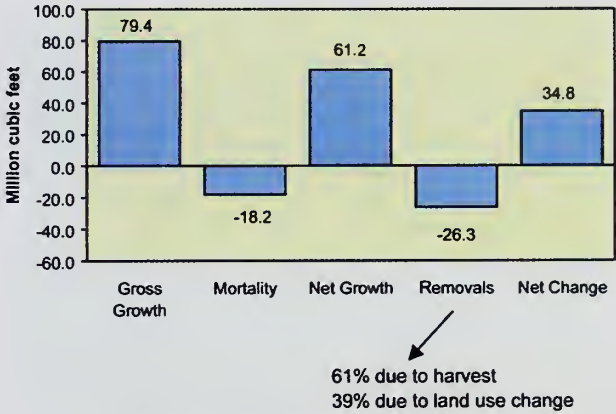


## THE VOLUME OF GROWTH IS TWICE REMOVALS

Forests have increased in volume during the last 50 years, and also have produced timber products. The 1998 forest inventory revealed that on an annual basis since 1985, the net

growth of trees averaged 55.7 million cubic feet and removals averaged 25.5 million cubic feet. The net growth of wood, which includes losses due to natural mortality, was about 2.3 times as much as was being cut or otherwise removed. Sixty-one percent of removals are attributed to harvesting, and 38 percent to the reclassification of timberland to noncommercial forest land or conversion to a nonforest use. Oak species accounted for nearly half of the volume harvested. The surplus growth over removals yields an annual net increase of 34.8 million cubic feet—an annual increase of 1 percent. The growth of trees has exceeded harvesting since the first inventory in 1953 and today's well-stocked stands are the result of these steady gains accumulating in the forest.

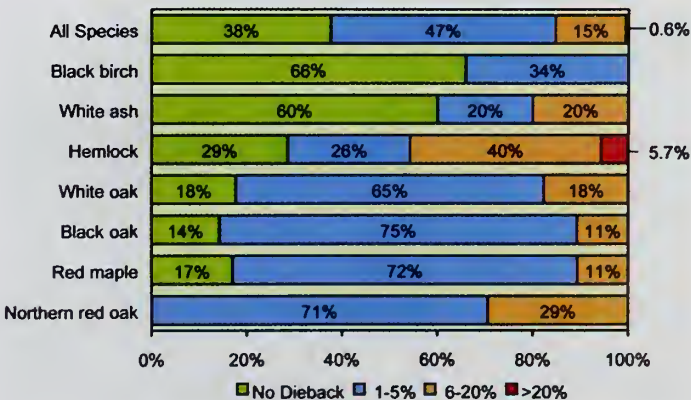
COMPONENTS OF CHANGE IN LIVE VOLUME ON TIMBERLAND



## FOREST HEALTH

The USDA Forest Service Forest Health Monitoring (FHM) Program looks at a wide set of indicators that reflect forest conditions. One of these measures is crown dieback, or the percentage of branch tips that are dead. Dieback can be a sign that the tree is being attacked by an insect or disease or has other health problems. Few trees in Connecticut measured by FHM scientists had significant amounts of crown dieback. Eighty-five percent of the trees measured had little (1 to 5 percent) or no dieback; only 1 percent of the trees had dieback greater than 20 percent. Hemlock trees accounted for the heaviest dieback, most likely attributable to damage by the hemlock wooly adelgid. Differences in dieback among species may indicate differences in tree vigor, though some variations should be expected due to differences in growth characteristics. Over time, observations of dieback and other attributes will allow researchers to identify trends and better evaluate forest conditions.

DIEBACK OF TREES MEASURED IN 1996-99







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## CONCERNS AND OBSERVATIONS

From the mid-1800s to the early 1950s, the widescale return of Connecticut's forests was remarkable. For the past 50 years, new forest land has been offset by losses to land development, with the total amount of forest land stable. Forests are maturing, as shown by increases in tree size and number and volume per acre. Most trees are in good condition according to forest health monitoring surveys. The challenge for the future is how to sustain the delivery of goods and services people expect from Connecticut's forest resource while addressing problems associated with increasing land development; introduced pests, diseases, and invasive exotic plants; and lack of regeneration of desirable tree species due to heavy browsing by deer.

For more information call: Forest Inventory & Analysis (610) 557-4051 or write: USDA Forest Service, FIA Unit, 11 Campus Boulevard, Suite 200, Newtown Square, PA 19073-3294, or see our web page at <http://www.fs.fed.us/ne/fia/>

or write: Department of Environmental Protection, Division of Forestry, 76 Elm Street, 6th Floor, Hartford, Connecticut 06106-5127 or call (860) 424-3630  
Website <http://dep.state.ct.us/burnatr/index.htm>

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